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## MOUSE HAVING A MASSAGE FEATURE

### *Description*

#### BACKGROUND OF INVENTION

[0001] ~~1.~~ Field of the Invention

[0002] The present invention ~~relate~~relates generally to an input device ~~for use to be used in~~ a computer system. More particularly, the present invention relates to a mouse having massage feature.

[0003] ~~2.~~ Description of the Related Art

[0004] Most computer systems, as for example general purpose computer such as portable computers and desktop computers, receive input from a user via an input device such as a mouse. As is generally well known, the mouse allows a user to move an input pointer (e.g., cursor) and to make selections with respect to a graphical user interface (GUI) on a display screen. The mouse typically ~~include~~includes a trackball or optical sensor (~~locate~~located at the bottom side of the mouse) for translating the motion of ~~the users~~a user's hand into signals that the computer system can use. For example, by positioning the mouse on a desktop and moving it thereon, the user can move an input pointer or cursor in similar directions within the GUI. The mouse also conventionally includes one or more ~~button~~buttons, which are located on the top side of the mouse. These one or more ~~button~~buttons, when selected, can initiate a GUI action such as a menu or object selections. The one or more buttons are typically provided by one or more button caps (e.g., ~~Through~~through an opening in the housing).

[0005] Recently, a scroll wheel has been added to the mouse to give ~~the user~~ scrolling functionality to a user. The scroll wheel ~~has been~~ saves time and steps, and allows a user to move through documents by physically rolling the wheel forward or backward instead of clicking on

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the scroll bar displayed on the GUI. The scrolling was implemented by selecting the scroll bar with the mouse, and moving the scroll bar on the GUI by moving the mouse up or down. A switch has also been incorporated into some mice for changing the mouse from a cursor control device. In cursor control mode, mouse ~~movement~~movements control cursor movements, and in scroll control mode, mouse movements control scroll movements. In most cases, the scroll wheel and switch require a separate mechanical component for actuating the scrolling feature. ~~These~~ This device also generally requires the mechanical component to be mounted in the mouse with a portion of it protruding out of ~~a~~the mouse housing to allow ~~a user's~~access to a user's finger~~aeess~~, i.e., the housing includes a cut out to allow the mechanical component to protrude ~~therethrough~~.

[0006] There are continuing efforts to improve ~~their~~ form, functionality and feel [[:]]. ~~For example several form of housing and position of operating region make user more comfortable and relaxing their muscle. As well known and use widely, The massaging to be useful in curing and relieving muscle stress, it would be desirable to provide the massage mechanism for a mouse that allow user able to choose activation of mechanism, including adjustable leveling of massaging, disabling and the massage disabling cover which will assembly into housing for more efficient disabling and using a mouse like unavailable massage mechanism. For example several forms of housing and operating regions make the mouse's use more comfortable and relaxing. As is well known and widely used, massage is useful in relieving muscle stress. It would be desirable to provide a mouse with a massage mechanism that allows a user to choose whether to activate the mechanism as well as to adjust the level of massage or to disable the mechanism by using a cover which, when assembled to the housing, allows for use of the mouse without massage.~~

## SUMMARY OF INVENTION

[0007] The invention relates, in one embodiment, to a peripheral input device for controlling movements on a display screen. The massage mouse ~~include~~includes a housing, ~~the a~~ a massage mechanism carried by the housing and a massage ~~disabling~~ cover which ~~assembly~~assemble into the housing for ~~massage mechanism~~ disabling the massage mechanism and hide the ~~massage~~

mechanism in a protruding portion out of the mouse housing.

[0008] The invention relates, in another embodiment, to a mouse having a massage region that is integrated into the housing of ~~a mouse~~. The massage region ~~represent~~ represents a working area of the massage mechanism disposed inside the housing.

[0009] The invention relates, in another embodiment, to a mouse having a massage region that is integrated into the housing of ~~a mouse~~ and ~~the a~~ light detect system which use LDR as light sensor and integrated into the housing of ~~a mouse~~. The light detect system is configured to detect the user's grip for ~~activate~~ activating the massage mechanism in the massage region.

[0010] The invention relates, in another embodiment, to a mouse having a massage region that is integrated into ~~a the~~ housing of ~~the mouse~~ and an adjustable leveling of massage system which ~~use uses an~~ adjustable resistor which is mounted in the mouse with portions of it protruding out of the ~~mouse~~ housing to allow ~~a user is finger access~~ access to a user's finger, i.e., the housing includes a cut out to allow a part of the adjustable resistor to protrude ~~therethrough~~ through.

## BRIEF DESCRIPTION OF DRAWINGS

[0011] The invention will be readily understood by the following detailed description in conjunction with the accompanying drawings, wherein ~~like~~ reference numerals designate ~~like~~ structural elements, and in which:

[0012] FIG. 1 is a ~~prospective perspective~~ perspective diagram of a peripheral input device, in accordance with one embodiment of the present invention.

[0013] FIG. 2 is a simplified diagram of the peripheral input device components, in accordance with one embodiment of the present invention.

[0014] FIG. 3 is a ~~simplified diagram of~~ plan view of the back side of a mouse having massage feature showing the switch, in accordance with one embodiment of the present invention.

[0015] FIGS. 4A-4F ~~Show the~~ show plan ~~view~~views of a mouse having massage feature in accordance with one embodiment of the present invention.

[0016] FIG. 4G ~~Show~~shows a perspective view of a mouse having massage feature in accordance with one embodiment of the present invention.

[0017] FIGS. 5A-5F ~~Show the~~show plan ~~view~~views of the massage disabling cover in accordance with one embodiment of the present invention.

[0018] FIGS. 5G-5H ~~Show the~~show perspective ~~view~~views of the massage disabling cover in accordance with one embodiment of the present ~~the~~ invention.

[0019] FIG. 6A-6F ~~Show the~~ show a plan view of a mouse having massage feature assembled with the massage disabling cover in accordance with one embodiment of the present invention.

[0020] FIG. 6G ~~Show a perspective~~shows a perspective view of a mouse having massage feature assembled with the massage disabling cover in accordance with one embodiment of the present invention.

[0021] FIGS. 7A-7F ~~Show the~~show plan ~~view~~views of the massage mechanism with sectional ~~view~~views of the massage region of housing in accordance with one embodiment of the present invention.

[0022] FIG. 7G ~~Show a perspective~~shows a perspective view of the massage mechanism with a sectional view of the massage region of housing in accordance with one embodiment of the present invention.

[0023] FIG. 8 ~~Show~~shows an exploded view of the massage mechanism of the present invention.

[0024] FIGS. 9A-9F ~~Show the~~show plan views of the cylindrical incline with gear in accordance with one embodiment of the present invention.

[0025] FIGS. 9G ~~Show a perspective~~shows a perspective view of the cylindrical incline with gear in accordance with one embodiment of the present invention.

[0026] FIG. 10 is an end, cross-section view of the massage region ~~which with a~~ cut out of the housing with the massage button and spring which ~~is are~~ components of the massage mechanism, in accordance with one embodiment of the present invention.

[0027] FIG. 11 ~~Shows~~shows a schematic diagram of the light sensing system ~~schematic~~ according to the present invention.

#### DETAILED DESCRIPTION

[0028] Embodiments of invention are discussed below with reference to FIGS. 1-11. It is therefore a primary object of the invention to provide a mouse having massage feature. The mouse not only ~~have movement~~ has a tracking movement mechanism for cursor indication, but is also equipped with a massage mechanism.

[0029] FIGS. 4A-4F ~~is are~~ plan views of a mouse having massage feature in accordance with one embodiment of the invention[[:]]. By peripheral input device, it is meant a mouse having massage feature capable to ~~connecting~~connect and ~~sending~~send information to a host system such as a computer system by cable connection. Alternatively, a radio frequency (RF) link or optical infrared (IR) link may be used in order to eliminate the cable. As ~~the a~~ peripheral ~~input~~ input device, ~~at the~~ mouse having massage feature is configured to implement one or more ~~task~~tasks (e.g., ~~Specify~~specific functions) in the host system. For example, the mouse may use be used to control movements and/or perform actions on a display screen of the host system (e.g., via a graphical user interfaceGUI).

[0030] The mouse having massage feature in FIGS. 4A-4G ~~include~~includes housing that

provides a structure for gripping the device during use thereof (e.g., handheld). ~~Refer~~Referring to FIG. 2, ~~the~~the housing ~~No. 25~~ also ~~provide~~provides a structure for enclosing, containing and/or supporting the internal ~~component of~~ components of a mouse having massage feature and supporting the massage disabling cover to assemble ~~into~~into it. ~~By the way~~For example, the internal components may correspond to a circuitry capable of processing/sending user inputs to the host system. ~~That is,~~ The contour of the housing ~~embodies the outward physical appearance.~~ ~~The~~ contour may be rectilinear, curvilinear or both.

[0031] The mouse having massage feature in FIGS. 4A-4G generally ~~include~~includes a massage region is configured to provide a massage mechanism which is mounted inside the housing ~~work through therefrom and which works there from.~~ The massage region is a portion of the housing and a component of the massage mechanism ~~for massaging user~~ are ~~massage button,~~ say the massage buttons. The massage mechanism will work through the massage region ~~by using a plurality of~~ massage button-buttons protruding out of the housing.

[0032] The massage mechanism ~~depicted in~~ FIGS. 7A-7G is mounted inside the housing and is configured to work through the massage region. ~~In activation refer to FIG. 8 Exploded shows an exploded view of the massage mechanism; an~~ . An output shaft ~~rotatably~~is rotatably driven by a motor 1. A worm gear 2 is mounted at the tip of the output shaft that will rotate and drive the first reduction gear 6 by their contact ~~gear teeth motivation~~gear teeth motion. ~~A~~The first reduction gear ~~continuing~~continues to drive a second reduction gear. ~~Also a~~ 7. The second reduction gear ~~continuing~~continues to drive the cylindrical incline with gear ~~in order,~~ 12 by their contact ~~gear teeth motivation~~gear teeth motion. The rotation of the cylindrical incline 12 ~~let the allows a~~ message button-reciprocating move movement of the message button 14 along the hole designed hole in the massage region 16. The reciprocating ~~move~~character movement of the message button 14 ~~take place due to~~ occurs when the cylindrical incline with gear 12 is continuously ~~rotatably~~rotatably driven, ~~said~~more than one revolution, and ~~as the~~ the tip of the message button ~~in cylindrical incline is touching the top side of the is roller or other relate form cylindrical incline is induced to move. while designed~~ The message button 14 which is mounted through a hole in the massage region 16, so that the direction movement of the message button ~~movement~~14 is limit limited. ~~So~~ Thus, the message button 14 will reciprocating

~~move~~have a reciprocated movement through ~~designed~~the hole designed in the massage region 16. The spring is ~~locate~~located between ~~the~~ massage button and inside ~~the~~ surface of ~~the~~ housing as shown in FIG. 10.

[0033] ~~Refer~~Referring to FIG. 11, ~~the~~The light detect system which ~~uses~~uses Light Decreasing Resistor (LDR) LDR, as a light sensor, is configured to work through ~~the~~a light operable window (see translucent window 21 in FIG. 2) which ~~is made~~makes up a substantial portion of the housing and is formed from a light transmissive material and/or translucent material. The light detect system ~~use for allow~~used allows a user ~~able~~ to activate the massage mechanism while ~~catching~~grabbing the massage mouse or ~~by~~ other light obstruction ~~performance~~actions which ~~do~~ not normally allow the light ~~normally passthrough to pass through~~ the light operable window, as for example covering an opaque material over the light operable window with an opaque material. Meanwhile, ~~the~~ LDR will ~~decreasing~~decrease the electric resistance and the positive voltage signal will proceed from ~~operation~~an operational amplifier IC1 ~~under with an~~ adjustable resistance R5 (see also adjustable resistance 24 in FIG. 2) controlling, the ~~adjusted~~ electric current ~~from source~~ is to be supplied to a motor M1 ~~passthrough the darlington through a~~ Darlington transistor IC2 and switch SW1 (see also 26 at FIG. 3). ~~The~~ Darlington transistor ~~in this schematic use is used as a current multiplier~~[[,]]. ~~said adjusted current through adjustable resistor will use as base current by darlington transistor and~~Therefore, the multiplied current is ~~supply supplied from the source passthrough supply motor is multiplied through a Darlington transistor to power the motor.~~ The switch use for close and unclosed circuitry selection; Said use as the preliminary operation for activate the massage mechanism in turn on position of switch and light due to there are cooperation of switch and theThe light detect system ~~using to complete~~completes the massage mechanism activation. Furthermore, ~~The~~ the massage mechanism is not actuated in turn off position. ~~Refer to~~ A DPDT (Double Pole, Double Throw) Switch ~~switch~~ SW1 is chosen for controlling the motor ~~directional rotation motor control~~. ~~Because of~~As the DPDT switch is able to select the clockwise and counterclockwise rotation of the motor output shaft which ~~effect to effects~~ the rotational direction of the cylindrical incline, a portion of the cylindrical incline with ~~gear and directional~~and thereby the relative position of the massage button ~~buttons~~ interchange change.

[0034] Refer to FIG. 8 ~~The shows an~~ exploded view of the massage mechanism. The motor 1 is mounted into a fixture 5 by ~~serews~~bolts 3 and 4 and a worm gear 2 is mounted at the tip of an output shaft. A first reduction gear ~~No. 6~~ is located at pin ~~No. 9~~, and a second reduction gear ~~No. 7~~ is ~~locate~~located at pin ~~No. 10~~10. The cylindrical incline with gear ~~No. 12~~ is located at pin ~~No. 13~~, with assembled bearing ~~No. 11~~. The bearing ~~use for support~~11 is used for supporting the rotation of cylindrical incline with gear 11. Pin ~~No. 9, 10 and 13~~ is/are fixed into fixture ~~perpendicularly respect to fixing region plane of fixture~~. ~~The massage button is configured to work through the desired hole of massage region;~~ the portion of fixture 5 perpendicular to the plane fixing portion of fixture 5. The massage button 14 is configured to work through the hole of the massage region 16, forming a portion of the housing. The spring 15 is locatelocated between the massage button and the inner surface of the massage region;~~portion of housing.~~

[0035] The output signal from an electric circuitry is ~~transmitting to~~transmitted to the outside device through either an output cable or a wireless transmitting circuitry. ~~In case of an~~An output cable ~~is protrude passthrough~~passes through the housing at an output transmitting region ~~No. 22,~~ 2 in FIG. 2. In case of a wireless transmitting circuitry, ~~is transmitting~~ an output signal~~[[,]]~~ is transmitted at an output transmitting region 22 ~~will change it form to be signal transmitting window which formed from through a~~ signal transmissive material and/or a translucent material and that ~~makes up~~constitutes a substantial portion of the housing.

[0036] Refer~~Referring~~ to FIGS. 6A-6G, ~~The~~the massage disabling cover is used for ~~assemble~~being properly assembled into the mouse housing to help a user ~~fully disabling~~ ~~massage~~ ~~or~~ ~~disable~~ ~~entirely~~ ~~the~~ ~~massage~~ ~~mechanism~~. ~~Proper assembly,~~ In a preferred embodiment, ~~The~~the massage disabling cover may have any desired shape suitable to hide the massage region. ~~User~~Thus the user is able to grip the assembled set of the mouse having massage feature with the massage disabling cover without touching the massage region. Furthermore, ~~The~~the massage disabling cover may have any desired shape to provide a comfortable grip.

[0037] It is understood, of course, that while the form of the invention herein shown and



described constitutes a preferred embodiment of the invention, it is not ~~intendintended~~ to illustrate all possible ~~formforms~~ thereof. It will also be understood that the words are used as words of for description rather than for limitation, and that various changes may be made without departing ~~form from~~ the spirit and scope of the disclosed invention ~~disclosed~~.

[0038] Although not shown, the mouse having massage feature may also include one or more buttons that provide clicking for performing ~~actionactions~~ on the display screen. By way of example, the action may include selecting an item on the screen, opening a file ~~or document~~ ~~exacting instructions~~, starting a program, viewing a menu, and/or the like. The buttons may be widely varied. For example, the buttons may be mechanical buttons that are disposed through an opening in the housing or a unified button/housing that incorporates the functionality of a button (or ~~button buttons~~) directly into the housing ~~the~~. The mouse having massage feature may also ~~behave~~ be a combination of the above (e.g., mechanical buttons and unified button housing). In the illustrated embodiment, the clicking action is ~~provide~~provided by a unified button housing and thus there are no separate mechanism ~~button buttons~~.

[0039] Additionally, ~~The~~the mouse having massage feature for performing additional movement on the display screen (e.g., by providing positional data to the host). Examples of position detection mechanism, which may be used, are optical arrangements, trackball arrangements, joystick arrangements, ~~Mouse mouse~~ pad arrangement<sup>23</sup> (see FIG. 2) arrangements and the like. The position detection mechanism may provide functionality similar to ~~the a~~ mouse pad for example, ~~the mouse pad as well as the position detection mechanisms may be used to perform~~ cursor movement.

[0040] In one embodiment, the position detection mechanism, which is commonly used in mice, provides positional data corresponding to movements of the housing when ~~its it~~ is moved across ~~the a~~ surface (e.g., a desktop)~~[[.]].~~ ~~By way of example the position detection mechanism, both of which are commonly used in mice.~~ Further, the position detection mechanism is generally positioned on the bottom side of the device (rather than on the top side where the touch pad, i.e., the movement sensitive areas, are located). In one implementation, a bottom side of the housing has an external contour that ~~substantial~~substantially conforms to the contour of a flat surface

such as a desktop.

[0041] The term "scrolling" as used herein generally pertains to moving displayed data or images (e.g., text or graphics) across a viewing area on a display screen so that a new set of data or ~~image~~images (e.g., line of text or graphics) is brought into view in the viewing area. In most cases, once the viewing is full, each view set of data appears at the edge of the viewing area and all other sets of data move over one position. That is, the new set of data appears for each set of data that moves out of the viewing area. In essence, scrolling allows a user to view consecutive sets of data currently outside of the viewing area. ~~The portion of the display screen~~ (e.g., the window frame). By way of example, the scrolling may be used to help perform internet browsing, spreadsheet manipulation, viewing code, computer aided design, and the like.

[0042] In one embodiment, vertical scrolling is implemented finger is moved across the scrolling region in a first direction, as for example, from front ~~of to~~ back or back to front~~[[,.]~~. This particular embodiment is shown in ~~FIGS. 1A-1F~~ FIG. 1. In ~~the~~ case of vertical scrolling when a user scrolls (or pans) down, each new set of data appears at the bottom of the viewing area and all other of data appears at the bottom of the viewing area and all other sets of data move up one position. If the viewing area is full, the top set of data moves out of the viewing area. Similarly, when a user scrolls (or ~~pan~~pans) up, each new set of data ~~appear~~appears at the top of the viewing area and all other sets of data move down one position. If the viewing area is full, the bottom set of data ~~move~~moves out of the viewing area.

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*Claims*

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1-25 Canceled.

26. (New) A computer mouse comprising:

\_\_\_\_\_ a housing;

\_\_\_\_\_ a massage mechanism which has at least one button that protrudes out from said housing;

and

\_\_\_\_\_ a cover which is attachable to and removable from said housing which, when assembled to said housing, covers said massage mechanism; and

\_\_\_\_\_ a light sensor positioned within said housing which senses the presence or absence of user's hand or said cover covering said light sensor, said light sensor providing a signal which turns on or off said massage mechanism depending on a presence or absence of said user's hand or said cover.

27. (New) The computer mouse of claim 26, wherein the level of massage provided by said massage mechanism of said mouse is adjustable.

28. (New) The computer mouse of claim 26, wherein said massage mechanism includes a plurality of buttons each of which is spring biased against a rotatable surface which includes an inclined portion.

29. (New) The computer mouse of claim 26, wherein said light sensor is positioned in a center of said massage mechanism.

30. (New) The computer mouse of claim 26, wherein said cover has at least a portion which projects under said housing.

31. (New) The computer mouse of claim 26, wherein said housing has a contoured top and wherein said cover has a shape which matches said contoured top.

32. (New) The computer mouse of claim 28, wherein said rotatable surface is driven by an electric motor, further comprising a Double Pole, Double Throw switch for activation by a user to reverse a direction of the electric motor.

33. (New) The computer mouse of claim 32, wherein the electric circuit of said mouse uses a Darlington transistor as a current multiplier to multiply the current needed to power said electric motor of said massage mechanism.

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MOUSE HAVING A MASSAGE FEATURE

**Abstract**

A peripheral input device for controlling movement on the screen. More particularly, having massage feature. User can control the massaging of mouse by switch cooperate with light sensing and adjustable level of massaging. The massaging help user relax and treat fatigue in effective area while using. A massage disabling cover is use for assemble into mouse housing and use mouse without massaging.

A computer mouse connected to a host computer includes a massage mechanism controlled by the user through a switch cooperating with a light sensing system. The user may also control the level of massage by an adjustable resistor. The massage stimuli administered help relax and treat fatigue. A disabling cover is provided which, when assembled to the housing, enables use of the device without massage as would occur, for example, with a conventional mouse.

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